

Claims

What is claimed is:

1. A method for determining a profile of a pavement, including the steps of:  
(35b) determining an angular slope of a mobile machine as the mobile machine traverses the pavement; and  
determining a change in elevation of the pavement as a function of the angular slope and a distance from a first ground engaging member<sup>1st compactor wheel</sup> on the mobile machine to a second ground engaging member<sup>2nd compactor wheel</sup> on the mobile machine, the change in elevation being indicative of a profile of the pavement.
2. A method, as set forth in claim 1, further including the step of determining a location of the change in elevation.
3. A method, as set forth in claim 2, further including the step of controlling an amount of compaction by a compactor as a function of the change in elevation as the compactor approaches the determined location.
4. A method, as set forth in claim 1, wherein the mobile machine is a compactor, and further including the step of controlling an amount of compaction by the compactor as a function of the change in elevation.
5. A method, as set forth in claim 1, wherein determining a change in elevation includes the step of multiplying a sine of the angular slope by the distance from the first ground engaging member to the second ground engaging member.

10015008.121101

6. A method, as set forth in claim 5, further including the step of comparing the change in elevation to a maximum allowable change in elevation.

7. A method, as set forth in claim 6, further including the step of controlling an amount of compaction by a compactor as the compactor traverses the pavement in response to the change in elevation being greater than the maximum allowable change in elevation.

8. A method, as set forth in claim 7, wherein controlling an amount of compaction includes the steps of:

increasing an amount of compaction in response to a positive change in elevation being greater than a maximum allowable positive change in elevation; and

decreasing an amount of compaction in response to a negative change in elevation being greater than a maximum allowable negative change in elevation.

9. An apparatus for determining a profile of a pavement, comprising:

a mobile machine having a first ground engaging member and a second ground engaging member, the first ground engaging member being a known distance from the second ground engaging member; ✓

a slope determining system located on the mobile machine; and

✓ a controller located on the mobile machine for receiving a signal indicative of an angular slope from the slope determining system, and responsively determining a change in elevation of the pavement as a function of the angular slope and the distance between the first and second ground engaging members, the change in elevation being indicative of a profile of the pavement.

10015003.121101

10. An apparatus, as set forth in claim 9, further including a position determining system located on the mobile machine for determining a location of the change in elevation.

11. An apparatus, as set forth in claim 10, wherein the controller is a first controller and the position determining system is a first position determining system, and further including:

a compactor for traversing and responsively compacting the pavement;

a second position determining system located on the compactor;  
and

a second controller located on the compactor for receiving information from the first controller relevant to the change in elevation and the location of the change in elevation, and responsively controlling an amount of compaction at the location of the change in elevation.

12. An apparatus, as set forth in claim 11, wherein the second controller is adapted to increase an amount of compaction in response to a positive change in elevation being greater than a maximum allowable positive change in elevation, and decrease an amount of compaction in response to a negative change in elevation being greater than a maximum allowable negative change in elevation.

13. An apparatus, as set forth in claim 10, wherein the mobile machine is a compactor for traversing and responsively compacting the pavement, and wherein the controller is further adapted to determine a position of the change in elevation and responsively control an amount of compaction at the position of the change in elevation.

10015008.121101

14. An apparatus, as set forth in claim 13, wherein the controller is adapted to increase an amount of compaction in response to a positive change in elevation being greater than a maximum allowable positive change in elevation, and decrease an amount of compaction in response to a negative change in elevation being greater than a maximum allowable negative change in elevation.

15. An apparatus, as set forth in claim 14, wherein the controller is adapted to determine a change in elevation on a current pass of the compactor and responsively control an amount of compaction on the current pass.

16. An apparatus, as set forth in claim 14, wherein the controller is adapted to determine a change in elevation on a current pass of the compactor and responsively control an amount of compaction on a future pass of the compactor.

✓ 17. A method for determining a deviation from a profile specification of a pavement, including the steps of:

establishing a maximum allowable change in slope of the pavement, the maximum allowable change in slope being a function of a maximum allowable profile deviation of the pavement, the maximum allowable profile deviation being indicative of the profile specification; ok

monitoring an angular change in slope of a mobile machine as the mobile machine traverses the pavement; and

determining a condition of the angular change in slope being greater than the maximum allowable change in slope.

10015008.121101

18. A method, as set forth in claim 17, further including the step of determining a location of the pavement having an angular change in slope greater than the maximum allowable change in slope.

19. A method, as set forth in claim 18, further including the step of controlling an amount of compaction by a compactor in response to traversing the location of the pavement having an angular change in slope greater than the maximum allowable change in slope.

✓ 20. A method for determining a change in elevation of a pavement, including the steps of:

determining an angular slope of a mobile machine as the mobile machine traverses the pavement;

determining the change in elevation of the pavement as a function of the angular slope and a distance from a first ground engaging member on the mobile machine to a second ground engaging member on the mobile machine; and

determining a location of the change in elevation.

21. A method for determining a profile of a pavement as a compactor traverses the pavement, including the steps of:

determining an angular change in slope of the compactor during a current pass;

determining a profile deviation of the pavement as a function of the angular change in slope and a distance from a first ground engaging member on the compactor to a second ground engaging member on the compactor, the profile deviation being indicative of the profile of the pavement;

determining a location of the profile deviation; and

10015008 121101

controlling an amount of compaction by the compactor during a future pass as a function of the profile deviation as the compactor approaches the determined location.

22. A method for determining a profile of a pavement as a compactor traverses the pavement, including the steps of:

- determining an angular change in slope of the compactor during a current pass;
- determining a profile deviation of the pavement as a function of the angular change in slope and a distance from a first ground engaging member on the compactor to a second ground engaging member on the compactor, the profile deviation being indicative of the profile of the pavement; and
- controlling an amount of compaction by the compactor during the current pass in response to determining the profile deviation.

23. A method for determining a deviation from a profile specification of a pavement as a compactor traverses the pavement, including the steps of:

- establishing a maximum allowable change in slope of the pavement, the maximum allowable change in slope being a function of a maximum allowable profile deviation of the pavement, the maximum allowable profile deviation being indicative of the profile specification;
- monitoring an angular change in slope of the compactor during a current pass;
- determining a condition of the angular change in slope being greater than the maximum allowable change in slope; and
- responsively controlling an amount of compaction by the compactor.

10015008-121101

24. A method, as set forth in claim 23, wherein controlling an amount of compaction includes the step of controlling the amount of compaction during the current pass.

25. A method, as set forth in claim 23, further including the step of determining a location where the angular change in slope is greater than the maximum allowable change in slope.

26. A method, as set forth in claim 25, wherein controlling an amount of compaction includes the step of controlling the amount of compaction at the determined location during a future pass.

10015008 121101